

# WATER QUALITY M E M O R A N D U M

## Utah Coal Regulatory Program

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May 26, 2011

TO: Internal File

THRU: James D. Smith, Permit Supervisor *DS 5/26/11*

FROM: April A. Abate, Environmental Scientist III *AAA 5-26-2011*

RE: 2010 Fourth Quarter Water Monitoring, Plateau Mining Corporation (PMC), Willow Creek Mine, C/007/0038-WQ10-04 Task ID #3671

The Willow Creek Mine is in reclamation. The mines have been closed and sealed. The disturbed areas around the portals have been regraded and seeded. The most recent surface operations took place in Willow Creek Canyon, about a mile from the junction between U.S. Highway 6 and State Highway 191. The reclaimed area in Crandall Canyon is part of the Willow Creek permit area received Phase I Bond Release approval from the Division. The MRP requires that all surface water sampling be conducted up through Phase II Bond Release.

There are no ground water sites monitored during the reclamation phase.

1. Were data submitted for all of the MRP required sites? YES ☒ NO ☐

Under the reclamation plan, surface water monitoring is required for sites listed on Table 4.7-2 and shown on Map 15.

Springs- There are no springs monitored during the reclamation phase.

Streams- There are six surface water-monitoring sites:  
B3N (Willow Creek above power plant),  
B-5 (Price River below processing plant above Willow Creek),  
B-6 (Price River above coal processing plant),  
B25 (Crandall Canyon Creek),  
B26 (lower reach of Crandall Canyon)  
B151 (Willow Creek – 3 miles above Willow Creek Mine)

The reclamation sampling water quality list is presented in Section 13, p. 28. Sampling is conducted quarterly. PMC tries to monitor the sites within a two week period from March 15<sup>th</sup>, June 10<sup>th</sup>, September 5<sup>th</sup> and November 30<sup>th</sup> to attempt to collect data that coincides with first thaw, spring high flow, end of summer low-flow and last sample before

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freeze-up.

All required stream sampling locations were monitored for the quarter on November 29<sup>th</sup> and December 2, 2010. As is typical, Crandall Canyon Creek samples B25 and B-26 did not report any flow data.

**Wells-** There are no operational monitoring wells.

**UPDES-** The mine has been reclaimed and as a result, there are no currently active Utah Pollutant Discharge Elimination System (UPDES) monitoring locations at the site.

2. Were all required parameters reported for each site? YES ☒ NO ☐
3. Were any irregularities found in the data? YES ☒ NO ☐

Some of the stream sample parameters sampled this quarter were outside of two standard deviations:

Date	Sample ID	D-Ca mg/L	D-Mg mg/L	D-K mg/L	SO4 mg/L
9/23/2010	B3N	-	74.53	5.44	292
9/23/2010	B5	32.41	-	-	--
9/23/2010	B6	33.03	-	-	-
Reliability Check	Attention Value	Ca/(Ca + SO4) <50%	Mg/(Ca + Mg) >40%	K/(Na + K) >20%	Ca/(Ca + SO4) <50%
Results this Quarter		52%	54%	5%	18%

Elevated concentrations of dissolved magnesium, potassium and sulfate were detected in sample B3N during the Fourth quarter. Based on the table shown above, the reliability checks performed on the data with respect to the dissolved magnesium:calcium ratio and calcium:sulfate ratio measurements were above and below the action levels, respectively. The dissolved potassium level was below the "attention value". However, historically data have shown that magnesium:calcium ratio have consistently ranged between 42%-55% and calcium:sulfate ratios typically range from 20%-29%.

Calcium concentrations in stream samples B5 and B6 were slightly lower than usual during the Fourth quarter. The ratio of calcium:sulfate in both samples was report at or about 52%, which is not considered an attention value.

In general, reliability checks for total dissolved solids (TDS) relative to measured conductivity show a TDS result remaining between 55 – 75% of the conductivity value. All four of the samples collected this quarter were within acceptable ranges for TDS/Conductivity ratios. All of the TDS results for the stream samples this quarter measured between 177 mg/L and 811

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mg/L range, indicative that water quality is healthy and acceptable for stream water. TDS standards for this section of the Price River Watershed are set at 1,700 mg/L based on the Utah Administrative Code Rule R317-2. Stream samples collected continue to remain well below this standard.

**4. On what date does the MRP require a five-year resampling of baseline water data.**

Baseline data were collected at the beginning of mining operations for a two-year period; however, routine 5-year sampling is not specified in MRP. The Division recommends baseline water quality parameter sampling at each five-year renewal period.

**5. Based on your review, what further actions, if any, do you recommend?**

No further actions are necessary at this time.